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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/888,559	06/26/2001	Jin Koog Shin	054358-5004	9422

9629 7590 05/21/2003

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EXAMINER	
NGUYEN, TUYEN T	
ART UNIT	**PAPER NUMBER**
2832	

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/888,559	Shin et al.
Examiner	**Art Unit**
Tuyen T. Nguyen	2832

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Feb 24, 2003* .

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1, 4-12, 15, and 16* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1, 4-12, 15, and 16* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 4-12 and 15-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 lacks sufficient structure to support the functional language of "the carbon nanotube and/or carbon nanofiber is synthesized between catalysts fixed at desired locations on a substrate, and wherein the catalysts are transition metals or alloys of transition metal." Applicant should clarify the specific "desired locations."

Claim 7 lacks sufficient structure to support the functional language of "the carbon nanotube and/or carbon nanofiber is synthesized between catalysts fixed at desired locations on a substrate." Applicant should clarify the specific "desired locations."

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 6-7, 9-10 and 12, 15-16, as best understood in view of the rejection under 112 second paragraph, are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art of figure 1 in view of Miyamoto [US 6,157,043].

Applicant's admitted prior art of figure 1 discloses an inductor [1] including a coil [see figure 1].

Applicant's admitted prior art of figure 1 discloses the instant claimed invention except for the inductor being synthesized from a carbon nanotube.

Miyamoto discloses a solenoid device being synthesized from a carbon nanotube [see background of the invention] wherein the nanotube being doped with born [column 2, lines 63-64].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to synthesized carbon nanotube for the coil of applicant's admitted prior art of figure 1, as suggested by Miyamoto, for the purpose of reducing the size of the inductor.

Regarding claim 7, Miyamoto further discloses the use of stressing the carbon nanotube to form a shape [column 2, lines 7-14].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to use the stress technique of Miyamoto in order to form the desired inductor configuration in the inductor of applicant's admitted prior art of figure 1.

Regarding claims 10 and 12, applicant's admitted prior art of figure 1 discloses the instant claimed invention except for except for coil being formed of a carbon nanotube with ferrite powder.

Miyamoto discloses the carbon nanotube structure being mounted on a silicon substrate [27] and including ferrite magenetic material filling [column 2, line 15-20].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to form the inductor of applicant's admitted prior art of figure 1 using the mounting design of Miyamoto for the purpose of reducing size.

Regarding claim 16, It would have been obvious to one having ordinary skilled in the art at the time the invention was made that the ratio of carbon nanotubes to fillers would regulate the inductance.

5. Claims 4-5, 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art of figure 1 in view of Miyamoto as applied to claims 1, 7 and 10 above, and further in view of Smalley et al. [US 6,183,714].

Applicant's admitted prior art of figure 1 in view of Miyamoto discloses the instant claimed invention except for the specific synthesis process and transition metals.

Smalley et al. discloses a method of synthesizing wires from carbon nanotubes by using a group VIII transition metal as a catalyst.

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to use the synthesis design of Smalley et al. for the carbon nanotube of applicant's admitted prior art of figure, as modified, for the purpose of facilitating mounting.

Response to Arguments

6. Applicant's arguments filed 2/24/03 have been fully considered but they are not persuasive.

Applicant argues that:

[1] Miyamoto is non-analogous to the claimed invention.

[2] There is no motivation to combine the teaching of Miyamoto with the prior art of figure 1 shown by applicant.

[3] Examiner uses impermissable hindsight.

The examiner disagrees.

Regarding [1], in response to applicant's argument that Miyamoto is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Miyamoto and applicant's claimed invention are directed toward carbon nanotube structure used in magnetic environment.

Regarding [2], in response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, Miyamoto discloses carbon nanotube structure in a solenoid/coil to generate a strong magnetic field with a weak current.

Regarding [3], in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tuyen T. Nguyen whose telephone number is (703) 308-0821.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Elvin Enad, can be reached at (703) 308-7619. The fax number for this Group is (703)872-9318 before the final office action, if the response is after final office action the fax number is (703)872-9319.

Any inquiry of a general nature or relating to status of this application of proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

TTN TTN

May 18, 2003

LINCOLN DONOVAN
PRIMARY EXAMINER
GROUP 2100